

REMARKS

Claims 1-2, 5-6, 9-10, 13-17, and 20 were rejected under 35 U.S.C. 102(b) as being anticipated by Boice (5,978,029). Claims 3-4, 7-8, 11-12, and 18-19 were rejected under 35 U.S.C. 103(a) as being unpatentable over Boice in view of Yogeshwar (6,026,232).

All independent claims 1, 6, 10, 15, and 16 and dependent claims 5, 9, 13, and 20 relating to low complexity frames were rejected under Boice. Boice describes "employing a first encoding subsystem to analyze the sequence of video frames and derive information on at least one characteristic thereof, the at least one characteristic being at least one of scene change, picture quality, bits used, target bit rate, and picture type; automatically processing the at least one characteristic in real-time to produce a value for at least one controllable parameter used in encoding the sequence of video frames; and encoding the sequence of video frames employing a second encoding subsystem and using the value of the at least one controllable parameter to produce a bitstream of encoded video data." (2: 42-52)

Independent claim 15 recites "if a fade has occurred, utilizing means to select a frame with low-complexity in the fade as an I frame in said video stream." Independent claims 1, 6, 10, and 16 recite "wherein a frame with low complexity is selected as an I frame in the modified video stream if the scene change is a fade."

The Examiner argues that Boice describes creating a modified video stream using lowest complexity frames as an I frame if the scene change is a fade. The Applicants respectfully disagree. The material the Examiner cited in Boice states "if a fade is detected by subsystem E1, then subsystem E2 may react by using the proper reference frames for motion estimation/compensation, and/or change the encoding mode of frames. An example of this may be forcing an I picture, or coding all macroblocks in a P or B picture as intra-macroblocks." (Column 11, Lines 16-21) No frame with low complexity is selected as an I frame. By contrast, Boice teaches away by merely stating that an I frame can be "forced" or everything in a P or B picture can be coded as "intra-macroblocks." This is similarly to the conventional techniques described in the current application which "place far too many I frames during fades." (page 20, lines 21-26) Yogeshwar similarly does not teach or suggest using low complexity frames as I frame. In fact, Yogeshwar does not even mention fades.


The Examiner also takes official notice that B frames require the least amount of bits to code when compared to I and P frames, and therefore, it would have been obvious to code the current frame as a B frame. The Applicants respectfully disagree. B frames are not necessarily low complexity frames and would not necessarily require the least amount of bits to code as I frames. For example, "the present invention makes use of a new dynamic GOP method and system that identifies the preferred locations for I frames as not only at the start of new scenes, but also on the lowest complexity frames (requiring the fewest bits to encode as an I frame)." (page 14, line 27 - page 15, line 2). In another example, "extremely low-complexity frames (such as black frames with fades) which are preferred locations on which to place the required I frames..." (page 17, lines 25-29).

Dependent claims 5, 9, 13, and 20 recite using a "lowest complexity" frame as an I frame. Neither Boice nor Yogeshwar teach or suggest selecting a low complexity frame, not to mention a "lowest complexity" frame.

Consequently, neither Boice nor Yogeshwar either alone or in combination teach or suggest selecting a low complexity frame as an I frame when a scene change is a fade.

In light of the above remarks relating to independent claims, the remaining dependent claims are believed allowable for at least the reasons noted above. Applicants believe that all pending claims are allowable and respectfully request a Notice of Allowance for this application from the Examiner. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at the telephone number set out below.

Respectfully submitted,
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